



Forest Health Protection

Pacific Southwest Region

Northeastern California Shared Service Area

Date: August 15, 2022

File Code: 3420

To: District Ranger, Eagle Lake RD, Lassen NF

Subject: Hazard Trees in Butte Creek Campground
(Lat 40.611770 Lon -121.297497) (FHP Report NE 22-06).

Butte Creek Campground was inspected for hazard trees on June 21 by FHP Plant Pathologist Bill Woodruff. The campground is “free-use” and appeared to be used very little at this time. Dixie Fire underburned the campground and surrounding area in 2021 leaving some trees with charred bases and others with varying amounts of dead crown foliage. Two large (36+inch dbh, 125+foot tall) ponderosa pine trees, weakened by burned-out fire scars, fell and blocked campground roads. The downed boles were bucked and moved to restore access to the southern campsites.

Listed below are some of the potential hazard trees found in and around Butte Creek Campground. Urgency for mitigating these trees is lessened by the fact that few campers are presently using this campground. However use might increase during hunting season.

Potential hazard trees found in or near the southern campsites:

- Dead trees in and near last (southern) campsite (Figure 1)
- Lots of dead trees across creek close to campsites (Figure 2)
- >36” dbh x 155’ tall ponderosa pine tree (100’ SE of fire ring), with charred base, leaning towards last campsite (Figure 3a,b)

Figure 2. A few of the dead trees across creek close to campsites.



Figure 1. At least 3 dead trees could strike southern-most campsite.



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Figure 3a. Leaning 155' tall ponderosa pine across creek, with charred base, 100' from fire ring in campsite.



- Dying white fir tree(E of road & S of bridge) with badly charred bole (Figure 4)
- All white fir trees with symptoms of HRD (Heterobasidion root disease): e.g. slow growth or declining crowns (Figures 5a,b,c)
- Trees with badly charred bases like the leaning >36" dbh PP 200 feet NW of the first Butte Creek campsite (Figure 6)
NOTE: This tree has a makeshift fire ring near it; indicating that visitors camp there.
- Old cottonwood snags (Figure 7)

It is important to remember that live white fir trees with badly charred bases can develop extensive butt decay soon after being burnt. See the 2004 FHP Hazard Tree Alert at the end of this report in the appendix. All white fir with charred butts should be checked often.

Figure 5a. WF wood delaminated by the root disease fungus *Heterobasidion occidentale* found in Butte Springs Campground.



Figure 3b. Leaning 155' PP.



Figure 5b. WF crowns showing HRD symptom of slow growth.



Figure 4. Dying WF with badly charred bole.



Figure 5c. HRD in white fir stump in campground.



Figure 6. Leaning large PP weakened by three badly charred fire scars near makeshift campsite along entrance road.

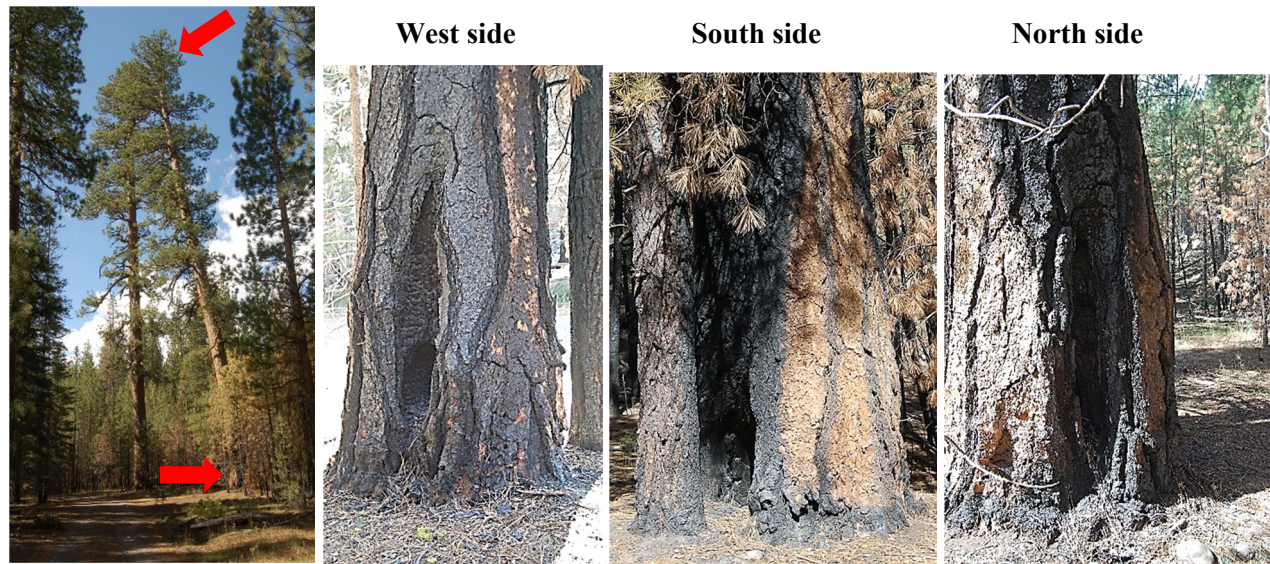


Figure 7. Cottonwood snags near Butte Creek campsites.

Left: Across creek near southern campsites.

Right: Along road (orange) near PP with 3 charred fire scars (Figure 6, red).



For more information, please contact Bill Woodruff at 530-249-7990 or william.woodruff@usda.gov.

/s/ *Bill Woodruff*

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cc: Dave Peters, R5 FHP

Appendix

Heterobasidion root disease (HRD)

Heterobasidion spp. is a fungus that attacks a wide variety of woody plants. All western conifer species are susceptible. Madrone (*Arbutus menziesii*), and a few brush species (*Arctostaphylos spp.* and *Artemisia tridentata*) are occasional hosts. Other hardwood species are apparently not infected. The disease has been reported on all National Forests in California, with incidence particularly high on true fir in northern California, in the eastside pine type forests, and in southern California recreation areas.

Heterobasidion root disease is one of the most important conifer diseases in US Forest Service Region 5, California. Current estimates are that the disease infests about 2 million acres of commercial forestland in California, resulting in an annual volume loss of 19 million cubic feet. Other potential impacts of the disease include increased susceptibility of infected trees to attack by bark beetles, mortality of infected trees presently on the site, the loss of the site for future production, and depletion of vegetative cover and increased probability of tree failure and hazard in recreation areas.

During periods favorable to the fungus, fruiting bodies (conks) form in decayed stumps, under the bark of dead trees, or under the duff at the root collar. New infection centers are initiated when airborne spores produced by the conks land and grow on freshly cut stump surfaces. Infection in true fir may also occur through fire and mechanical wounds, or occasionally, through roots of stumps in the absence of surface colonization. From the infected stump surface, the fungus grows down into the roots and then spreads via root-to-root contact to adjacent live trees, resulting in the formation of large disease centers. These infection centers may continue to enlarge until they reach barriers, such as openings in the stand or groups of resistant plants. In pines, the fungus grows through root cambial tissue to the root crown where it girdles and kills the tree. In true fir and other non-resinous species, the fungus sometimes kills trees, but more frequently is confined to the heartwood and inner sapwood of the larger roots. It then eventually extends into the heartwood of the lower trunk and causes chronic decay and growth loss.

Heterobasidion root disease in western North America is caused by two species: *Heterobasidion occidentale* and *H. irregulare*. These two species of *Heterobasidion* have major differences in host specificity. *H. irregulare* is pathogenic on ponderosa pine, Jeffrey pine, sugar pine, Coulter pine, incense cedar, western juniper, pinyon, and manzanita. *H. occidentale* is pathogenic on true fir, spruce, and giant sequoia. This host specificity is not apparent in isolates from stumps; with *H. occidentale* being recovered from both pine and true fir stumps. These data suggest that infection of host trees is specific, but saprophytic colonization of stumps is not. The fungus may survive in infected roots or stumps for many years. Young conifers established near these stumps often die shortly after their roots contact infected roots in the soil.

Hazard Tree Alert

True firs that survived wildfires are failing in as little as three years



During the 1999 Bucks Fire on the Plumas National Forest the crowns of many true firs were light to moderately scorched. However, these same trees suffered moderate to severe cambium injury and near complete girdling in some cases. Following the fire, frass and/or boring dust from wood boring and ambrosia beetles was

Black trees.....Be on the lookout for hazardous trees in burned forests. This kind of warning is common when conducting work in areas that have experienced wild or prescribed fires. Fire-killed trees are usually abundant and begin to fall about 3-5 years post-fire, creating very hazardous working conditions. Performing your job in these areas requires you to be extra cautious at a minimum, and under certain weather conditions

such as wind, to stay out of areas entirely. Walking a wide path around existing snags is one way to reduce the odds of being struck should one fail.

Green trees.....But what about the surviving trees? Recent monitoring of fire-injured trees has revealed the failure of 8" to 24" dbh red and white fir, with green crowns, in as little as three years. The rate of failure increases dramatically after the fourth year post-fire, especially in conjunction with high winds or heavy snows.



Extensive bole charring on this "live", 12" dbh red fir resulted in cambium kill and subsequent attack by ambrosia and wood boring beetles. Decay is now nearly 100% in pre-fire sapwood.



This 18" dbh red fir suffered >50% cambium kill during the 1999 Bucks Fire. It failed in the fall of 2004 with a full green crown.



This 8" dbh, fire-injured white fir was surviving with <5% of its functional xylem and phloem. The crown was still green when it failed in 2004.

evident on many of the tree boles, often indicative of internal injury. Bark sloughing over the last couple of years from the damaged areas of the bole and root collar has revealed extensive decay of the sapwood, however, most of these trees have maintained green crowns. During the fourth year post-fire, a few trees within the burn that had green crowns and extensive bole decay failed. In the fall of 2004, after an early storm brought heavy snow and wind, many more trees failed with these same characteristics. This has also been observed recently in a few fir trees in the 2001 Star Fire (Tahoe National Forest) and the 2000 Storrie Fire (Lassen National Forest). Based on the number of failed green trees observed this year in the Bucks Fire, true firs in these other fire areas are likely to start coming down at a higher rate within the next couple of years. People working in these areas or any other recently burned areas that contain red or white fir with similar fire injury, i.e. moderate to severe bole scorch with light to moderate crown scorch, should consider these trees hazardous until a closer inspection of the bole is completed. Forest Health Protection is currently working on fire-injured tree evaluation criteria to facilitate the early identification of trees that may succumb to the type of decay and failure presented here. For more information, contact Sheri Smith or Danny Cluck of the Forest Health Protection staff at 530-257-2151.